



Prerequisites for Humidity Products with Climate Quality from Infrared Geostationary Imaging

J. Schulz (1), A. Walther (2), M. Stengel (3), R. Bennartz (4), N. Selbach (1), R. Lindau (5)

1. Deutscher Wetterdienst, Germany
2. Free University of Berlin, Germany
3. Swedish Meteorological and Hydrological Institute, Sweden
4. University of Wisconsin, USA
5. University of Bonn, Germany

Atmospheric humidity is one of the most important drivers of the world's climate through its direct impact on the radiation budget and due to links to cloud and precipitation formation. The vertical humidity profile is one of the so-called essential climate variables defined by GCOS. The Satellite Application Facility on Climate Monitoring responds to the needs of GCOS by providing humidity data sets from several space-based sensors that have already a long history as the SSM/I, (A)TOVS and MVIRI/SEVIRI or become a long series as the IASI, GRAS and GOME-2 instruments on MetOp.

This presentation focuses on the prerequisites that are needed for a satellite-derived humidity climate data record. Potential errors are introduced in the climate records among others by biases in radiances and inconsistencies in the temporal records by using different satellites carrying the same instrument. On the example of vertically resolved water vapour retrieval from the SEVIRI instrument the sensitivity of the retrieval results on the calibration of infrared channels will be discussed. Comparison to ground and satellite-based measurements of water vapour and a radiance monitoring versus two NWP models show that the temporal stability of the calibration should be in the order of 0.1 K for the infrared channels to derive a bias-free total column and layered water vapour product. This stability level has not been reached by the routine

calibration for current SEVIRI instruments onboard the Meteosat Second Generation platforms.